CARDIOVASCULAR WAIVERS

CONDITION: HYPERLIPIDEMIA / HYPERCHOLESTEROLEMIA (ICD9 272.0) Revised October 2001

AEROMEDICAL CONCERNS: Coronary Artery Disease (CAD) is the leading cause of permanent suspension from flying duties and non-accidental, premature death in aircrew members. In an effort to reduce the risk of CAD, it is necessary to reduce or prevent the identified risk factors such as hyperlipidemia (HLD). With the availability of highly efficacious statin drugs, and with newer clinical trials demonstrating a profound effect of these drugs in primary and secondary prevention of coronary artery disease, there is now widespread agreement that primary treatment of HLD is indicated. An increase in CAD risk occurs with elevated plasma cholesterol, increased low density lipoprotein (LDL), and reduced high density lipoprotein (HDL).

WAIVERS: Hypercholesterolemia and any drug therapy is disqualifying for initial flight applicants. **Hypercholesterolemia controlled by either diet or by those drugs listed below is not disqualifying for aircrew members and no waiver is required** This information is filed **Information Only**. Several drugs listed require monitoring and annual submission of additional information with FDME. Submitted physicals without required laboratory values will be returned for completion. Patients requiring drug therapy should be DNIF for a trial period sufficient to observe for drug side effects prior to local flight clearance.

INFORMATION REQUIRED: For an accurate lipid profile determination: the patient should fast for 9-12 hours, with only water or fat-free fluids allowed. The aircrew member should be on a normal diet for the previous 2 weeks; and have no illness, operation or injury for the previous 4 weeks, and no minor febrile episode for 1 week. Causes of secondary hyperlipidemia such as hypothyroidism, diabetes, obstructive liver disease, (cholestasis), alcohol abuse, gout, renal failure, nephrotic syndrome, myeloma, systemic lupus erythematosis and use of drugs that may increase LDL cholesterol or decrease HDL cholesterol (progestins, anabolic steroids, and corticosteroids) should be excluded via history and appropriate appropriate laboratory testing, imaging for liver disease, and consultation with specialists as required. For assistance in determining evaluation requirements, contact USAAMA staff.

Aircrew members of any age with serum cholesterol values greater than or equal to 255 mg/dl (90^{th} percentile based on NCEP) should be evaluated for treatment with options as listed below. The goal is aggressive risk factor reduction for coronary artery disease.

FOLLOW-UP: Follow-up for specific drug regimens is listed below. Annual submission of plasma cholesterol and HDL are required.

TREATMENT: The first line of treatment for mild cases is Therapeutic Lifestyle Changes (TLC) including dietary control, weight loss, increased exercise, and reduction

in alcohol intake. Use of medication should be determined by current standards of care as proposed by the Adult Treatment Panel III (ATP III) of the National Cholesterol Education Program (NCEP). The first drug of choice is the statins followed by bile acid binding resins and then nicotinic acid. Use of ferric acids is generally reserved for cases with significant hypertriglyceridemia.
Recommended laboratory follow-up is as listed below for each medication class. Report a current (within 90 days) set of values as specified for medication class on annual FDME.

HMG CoA Reductase Inhibitors (Statins): LOVASTATIN, PRAVASTATIN, SIMVASTATIN, ATROVASTATIN, and FLUVASTATIN. (Liver Function tests (LFTs) 6- 12 weeks after the start of therapy and then every 6 months thereafter, CPK every 6 months and Lipid profile every 6 months).

Ferric Acids: GEMFIBROZIL, FENOFIBRATE. Prior to initiating treatment and at 3, 6, and 9 months, then annually, do LFTs to include bilirubin and LDH, CPK, CBC and complete Lipid Profile. (Hypersensitivity, hepatic dysfunction, dizziness, depression and blurred vision have been reported).

Bile-Acid Binding Resins: CHOLESTYRAMINE, COLESTIPOL. Submit prothrombin time and serum calcium annually. (These drugs cause constipation and interact with such drugs as hydrochlorothiazide, penicillin and tetracycline. Additionally, they may cause Vitamin K deficiency and subsequent hypoprothrombinemia).

Nicotinic Acid: NIACIN, NIASPAN. Serum glucose and uric acid every 6 months. LFTsevery 6-12 weeks for the first year and then every 6 months thereafter.

DISCUSSION: The incidence of heterozygous familial hypercholesterolemia in the U.S. is 1 in 500. Of male heterozygotes, 50% will have CAD by the time they reach 50 years of age. In familial hypertriglyceridemia, there is a risk of acute pancreatitis when total cholesterol > 1000 mg/dl and in severe cases, a rare incidence of peripheral neuropathy and dementia. The treatment of severe hypercholesterolemia has been shown to reduce the incidence of a first myocardial infarction. The treatment of mild/moderate cases of HLD is becoming increasingly recommended as a preventive strategy for CAD. A review of recent data in the AEDR shows that 10 % of aircrew have total cholesterol levels greater than 255 mg/dl. This figure is unchanged from 1990 and indicates a key area for preventive strategies.

ATP III guidelines reflect a simple seven step process to evaluate HLD, the cardiac risks associated, and recommended treatments. The primary target for therapy is the LDL with the goal for LDL cholesterol <100 mg/dl. Major risk factors that modify LDL goals include: tobacco use, hypertension, low HDL Cholesterol (<40 mg/dl), family history of premature CAD (first degree relative male < 55 y/o and female <65 y/o) and age (male> 45 y/o and female > 55 y/o).

REFERENCE: *Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III).* NIH: National Heart Lung and Blood Institute, NIH 01-3670, May 2001. http://www.nhlbi.gov/guideline/cholesterol/profmats.htm